Duluth Campus

Mechanical Engineering M.S.M.E.

UMD Mechanical/Industrial Engineering

Swenson College of Science and Engineering

Link to a list of faculty for this program.

Contact Information:
Email: MSME@d.umn.edu
Website: http://www.d.umn.edu/~dzhou/MSME/MSME.html

- Program Type: Master's
- Requirements for this program are current for Fall 2017
- Length of program in credits: 30
- This program does not require summer semesters for timely completion.
- Degree: Master of Science in Mechanical Engineering

Along with the program-specific requirements listed below, please read the General Information section of the catalog website for requirements that apply to all major fields.

The MSME combines professional engineering coursework with research in a field within mechanical engineering. Focus areas include thermo/fluids, materials/manufacturing, dynamics/control, and mechanical design and analysis. There are two options for completing an MSME degree: Plan A (thesis option), and Plan B (project option). Plan A includes writing and defending a thesis which requires in-depth research equivalent to 10 credits out of 30 total credits. Plan B includes a capstone project equivalent to 3 credits out of 30 total credits and targets practicing engineers.

Program Delivery

This program is available:

- via classroom (the majority of instruction is face-to-face)

Prerequisites for Admission

The preferred undergraduate GPA for admittance to the program is 3.00.

Completion of BS degree in mechanical engineering or admission to integrated undergrad/grad program at UMD. Other undergraduate degrees may be accepted; additional coursework may be required.

Graduate Record Examination (GRE) scores are not required for admission, but these scores will be taken into account if they are provided.

Other requirements to be completed before admission:
Applicants must provide two letters of recommendation concerning their academic ability and readiness for graduate education.

Special Application Requirements:
Integrated Undergraduate/Graduate (IUG) program:

Admission in the IUG program will be limited to strong academic credential undergraduates. Requirements include: enrolled in the UMD BSME program; upper division status in the undergraduate degree program when officially applying for the M.S. (It is strongly suggested that students apply to the program prior to completing 100 credits.); have a minimum overall GPA of 3.2 (on a 4.0 scale) in undergraduate coursework and a minimum GPA of 3.5 in the major or department approval.

International applicants must submit score(s) from one of the following tests:

- TOEFL
  - Internet Based - Total Score: 79
  - Paper Based - Total Score: 550
- IELTS
  - Total Score: 6.5
- MELAB
  - Final score: 80

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Information current as of March 28, 2024

Key to test abbreviations(TOEFL, IELTS, MELAB).

For an online application or for more information about graduate education admissions, see the General Information section of the catalog website.

Program Requirements

Plan A: Plan A requires 20 major credits, up to null credits outside the major, and 10 thesis credits.The final exam is written and oral.

Plan B: Plan B requires 30 major credits and up to null credits outside the major.The final exam is written and oral. A capstone project is required.
Capstone Project: Capstone project is 3 credits.

This program may not be completed with a minor.

Use of 4xxx courses toward program requirements is permitted under certain conditions with adviser approval.

1. All courses must be 4xxx or above and approved for graduate credit.

2. Maximum of 6 credits total of 4xxx courses (others must be 5xxx and above).

3. Maximum of 12 credits can be transferred in with the approval from the director of Graduate Studies.

4. Maximum of 6 credits from graduate programs in related fields outside of mechanical engineering.

MSME
Plan A
Core
ME 5110 - Analytic Techniques in Mechanical Engineering (3.0 cr)
ME 5120 - Advanced Dynamics and Control (3.0 cr)
ME 5210 - Advanced Thermal Fluid Sciences (3.0 cr)
ME 5220 - Advanced Mechanics of Materials (3.0 cr)
Electives
Take 6 or more credit(s) from the following:
•ME 4112 - Heat and Mass Transfer (3.0 cr)
•ME 4135 - Robotics and Controls (3.0 cr)
•ME 4145 - CAD/CAM (4.0 cr)
•ME 4175 - Machine Design (3.0 cr)
•ME 4365 - Global Sustainability Experience in Design/Manufacturing in Africa (3.0 cr)
•ME 4375 - Pipeline Engineering (3.0 cr)
•ME 5305 - Computational Fluid Dynamics (3.0 cr)
•ME 5315 - Nondestructive Evaluation of Engineering Materials (3.0 cr)
•ME 5325 - Sustainable Energy System (3.0 cr)
•ME 5345 - Smart Materials and Structures (3.0 cr)
•ME 5355 - Gas Turbines (3.0 cr)
Graduate Seminar
Take 2 or more credit(s) from the following:
•ME 8993 - Graduate Seminar (1.0 cr)
Thesis
Take 10 or more credit(s) from the following:
•ME 8777 - Thesis Credits: Master?s (1.0 - 10.0 cr)
or **Plan B**
Core
ME 5110 - Analytic Techniques in Mechanical Engineering (3.0 cr)
ME 5120 - Advanced Dynamics and Control (3.0 cr)
ME 5210 - Advanced Thermal Fluid Sciences (3.0 cr)
ME 5220 - Advanced Mechanics of Materials (3.0 cr)
Electives
Take 15 or more credit(s) from the following:
Take at most 6 credit(s) from the following:
•ME 4112 - Heat and Mass Transfer (3.0 cr)
•ME 4135 - Robotics and Controls (3.0 cr)
•ME 4145 - CAD/CAM (4.0 cr)

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- ME 4175 - Machine Design (3.0 cr)
- ME 4365 - Global Sustainability Experience in Design/Manufacturing in Africa (3.0 cr)
- ME 4375 - Pipeline Engineering (3.0 cr)
- Take 9 or more credit(s) from the following:
  - ME 5305 - Computational Fluid Dynamics (3.0 cr)
  - ME 5315 - Nondestructive Evaluation of Engineering Materials (3.0 cr)
  - ME 5325 - Sustainable Energy System (3.0 cr)
  - ME 5335 - Introduction to Finite Element Analysis (3.0 cr)
  - ME 5345 - Smart Materials and Structures (3.0 cr)
  - ME 5355 - Gas Turbines (3.0 cr)

Capstone Project

ME 8310 - Mechanical Engineering Capstone Project (3.0 cr)

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